

GOVERNMENT OF INDIA
DEPARTMENT OF SPACE

RAJYA SABHA

STARRED QUESTION NO. 174

TO BE ANSWERED ON THURSDAY, DECEMBER 22, 2022

SCIENTIFIC EVIDENCE TO INDIA'S HISTORY

*174. SHRI ANIL DESAI:

Will the PRIME MINISTER be pleased to state:

- (a) whether it is a fact that history of India's ancient civilisation is not just a myth but there are some evidence available to prove it;
- (b) if so, whether places like Ram Setu, submerged city of Dwarka etc., can also be scientifically proved by images taken by our remote sensing orbiting in space; and
- (c) if so, whether the space programme may also include and complete such research on historical facts/evidence?

ANSWER

MINISTER OF STATE IN THE MINISTRY OF PERSONNEL, PUBLIC GRIEVANCES &
PENSIONS AND IN THE PRIME MINISTER'S OFFICE

(DR. JITENDRA SINGH):

(a) to (c) A Statement is laid on the Table of the House.

STATEMENT LAID ON THE TABLE OF THE RAJYA SABHA IN REPLY TO STARRED QUESTION NO. 174 REGARDING “SCIENTIFIC EVIDENCE TO INDIA’S HISTORY” ASKED BY SHRI ANIL DESAI FOR ANSWER ON THURSDAY, DECEMBER 22, 2022.

- (a) India has rich cultural heritage and hosts a large number of archaeological sites spread across the country. There have been some studies carried out in India to explore the potential of space based remote sensing for archaeology. Some of these studies include mapping the paleochannels in northwest India using multi-sensor satellite data and understanding its migration and evolution. These studies have shown evidences of a prominent river system, which had become defunct and buried under sand cover of Thar Desert. This has been identified as an ancient river mentioned in many ancient Indian texts and epics. Also, the locations of sites belonging to Harappan civilization, when overlaid, were found to be on the banks of these paleochannels.

High resolution Satellite images show surface impressions of ancient civilisations of Harrapan age sites viz., Dolavira (Gujarat), Kalibanga (Rajasthan), Lothal (Gujarat) and mounds associated with Nalanda. The satellite images along with other associated technologies like Ground Penetrating Radar (GPR) have also been used to search buried sites. ISRO has also brought out an atlas showcasing synoptic view of 37 important cultural heritage sites, as observed from remote sensing satellites.

- (b) Remote sensing observation can help in understanding proxies for archaeological sites. They do not directly provide details of such ancient civilization, but some surface features like mounds, paleochannels, morphological anomalies, tonal anomalies etc. can be identified, which may be the proxies of buried archaeological sites. These observations need to be supported by ground investigations.

Indian satellites have acquired high resolution images over Ram Setu region connecting India and Sri Lanka. However, satellite images cannot provide direct information about the origin and age of this structure.

Submerged city of Dwarka cannot be seen by remote sensing satellites, as it cannot acquire images below the surface.

- (c) The present and future earth observation data, both in optical and microwave domain, could be used for the study of surface signatures, if any, of buried archaeological sites of ancient civilization. Satellite data alone is not sufficient for such research, and it can be used only as supportive information.

भारत सरकार
अंतरिक्ष विभाग

राज्य सभा

तारांकित प्रश्न संख्या :174

गुरुवार, 22 दिसंबर, 2022 को उत्तर देने के लिए

भारत के इतिहास के वैज्ञानिक साक्ष्य

*174. श्री अनिल देसाई:

क्या प्रधान मंत्री यह बताने की कृपा करेंगे कि :

- (क) क्या यह सच है कि भारत की प्राचीन सभ्यता का इतिहास केवल एक मिथक नहीं है बल्कि इसे प्रमाणित करने के लिए कुछ प्रमाण उपलब्ध हैं;
- (ख) यदि हां, तो क्या अंतरिक्ष में परिक्रमा कर रहे हमारे दूरस्थ उपग्रह द्वारा लिए गए चित्रों से भी वैज्ञानिक रूप से राम सेतु, जलमग्न नगरी द्वारका आदि जैसे स्थानों के अस्तित्व को प्रमाणित किया जा सकता है; और
- (ग) यदि हां, तो क्या अंतरिक्ष कार्यक्रम में ऐतिहासिक तथ्यों/ साक्ष्यों के संबंध में ऐसे शोध को शामिल और पूरा किया जा सकता है?

उत्तर

कार्मिक, लोक शिकायत और पेंशन मंत्रालय
तथा प्रधान मंत्री कार्यालय में राज्य मंत्री
(डॉ. जितेन्द्र सिंह) :

- (क) से (ग) इस संबंध में सभा के पटल पर विवरण प्रस्तुत है।

“भारत के इतिहास के वैज्ञानिक साक्ष्य” के संबंध में गुरुवार 22 दिसंबर, 2022 को उत्तर देने हेतु श्री अनिल देसाई द्वारा पूछे गए तारांकित प्रश्न संख्या 174 के जवाब में राज्य सभा के पटल पर प्रस्तुत विवरण।

(क) भारत की समृद्ध सांस्कृतिक विरासत है और देश भर में बड़ी संख्या में पुरातात्विक महत्व के स्थल फैले हुए हैं। भारत में पुरातत्त्व हेतु सुदूर संवेदन आधारित अंतरिक्ष क्षमता के उपयोग के लिए कुछ अध्ययन किए गए हैं। इनमें से कुछ अध्ययन बहु-संवेदक उपग्रह डेटा का उपयोग करते हुए पश्चिमोत्तर भारत में प्राचीन नदियों के मानचित्रण और उनके प्रव्रजन एवं विकास को समझने के लिए किए गए हैं। ये अध्ययन प्रमुख नदी प्रणाली के प्रमाण दर्शाते हैं, जो निष्क्रिय हो गईं और थार मरुस्थल के रेतीले आवरण में दफन हो गईं। इसकी पहचान भारत के अनेक प्राचीन ग्रंथों और महाकाव्यों में उल्लेखित प्राचीन नदी के रूप में की गई है। साथ ही, जमीन में दफन हड़प्पाकालीन सभ्यता से संबंधित स्थलों के स्थान इन प्राचीन नदियों के किनारों पर पाए गए।

उच्च विभेदन उपग्रह चित्र हड़प्पाकालीन स्थलों – धोलावीरा (गुजरात), कालीबंगा (राजस्थान), लोथल (गुजरात) और नालंदा से संबंधित टीलों की प्राचीन सभ्यता की सतह के छाप दर्शाते हैं। भू-भेदी रेडार (जी.पी.आर.) जैसी अन्य संबद्ध प्रौद्योगिकियों सहित उपग्रह चित्रों का भी उपयोग जमीन में दफन स्थलों की खोज के लिए किया गया है। इसरो ने सुदूर संवेदी उपग्रहों से प्रेक्षित 37 महत्वपूर्ण सांस्कृतिक विरासत वाले स्थलों के संक्षिप्त दृश्य दर्शाने वाले एटलस का प्रकाशन भी किया है।

(ख) सुदूर संवेदन प्रेक्षण पुरातात्विक स्थलों को परोक्ष रूप से समझने में सहायता कर सकते हैं। ये इन प्राचीन सभ्यताओं के प्रत्यक्ष ब्यौरे तो प्रदान नहीं करते, परंतु इनसे टीलों, प्राचीन नदियों, भू-आकृति संबंधी विसंगतियों, रंग-संबंधी विसंगतियों, आदि जैसी कुछ सतही विशिष्टताओं की पहचान की जा सकती है, जो जमीन में दफन पुरातात्विक स्थलों के प्रतिरूप हो सकते हैं। इन प्रेक्षणों की वास्तविक जांच के माध्यम से पुष्टि की आवश्यकता होती है।

भारतीय उपग्रहों ने भारत और श्रीलंका को जोड़ने वाले राम सेतु क्षेत्र के उच्च विभेदन वाले चित्र प्राप्त किए हैं। तथापि, उपग्रह चित्र इस संरचना के उद्भव एवं आयु के बारे में सीधी जानकारी उपलब्ध नहीं करा सकते हैं।

जलमग्न नगरी द्वारका को सुदूर संवेदी उपग्रहों से नहीं देखा जा सकता है, क्योंकि ये सतह के नीचे के चित्र नहीं ले सकते हैं।

(ग) प्राचीन सभ्यता के जमीन में दफन पुरातात्विक स्थलों के सतही चिह्न, यदि हैं, तो उनके अध्ययन के लिए प्रकाशिकी और सूक्ष्मतरंग, इन दोनों डोमेन में, वर्तमान और भावी भू-प्रेक्षण डेटा का उपयोग किया जा सकता है। ऐसे अनुसंधान के लिए एकमात्र उपग्रह डेटा पर्याप्त नहीं है और इसका उपयोग मात्र सहायक जानकारी के रूप में किया जा सकता है।

SHRI KARTIKEYA SHARMA: Mr. Chairman, Sir, I would like to ask the hon. Minister whether the present Government is making any efforts for conducting scientific assessment of our glorious past, history and historical facts of India from the Vedic period to the present day and introducing it into the curriculum. We know that the previous Governments have ignored this.

MR. CHAIRMAN: Just the question. Now, hon. Minister.

DR. JITENDRA SINGH: Sir, I must compliment the hon. Member for raising a question that is seldom asked in this House, about using modern technology to explore information from the ancient past. I am glad to share with him that the Department of Space is actually engaged in this. We have discovered some of the information and remains from the Harappan Civilization also. As far as the question that was asked by him here concerning the *Ram Setu*, we have certain limitations in discovering that because the history dates back to more than 18,000 years and if you go by history, that bridge was about 56 kilometres long. Yes, to some extent, through space technology we have been able to discover pieces and islands, some kind of limestone shoals, which of course, can't be accurately said to be remnants or parts of a bridge. But they do have a certain amount of continuity in location through which some surmises can be drawn. So, what I am trying to say in short is that it is difficult to actually pinpoint the exact structure that existed there, but there is some kind of an indication, direct or indirect, that those structures have existed. We have also tried to conduct similar kinds of exercise with respect to the ancient Dwarka city and other places. I am glad that the hon. Members have also taken interest in this.

SHRI SUKHENDU SEKHAR RAY: Sir, Chandraketugarh near Kolkata had been a centre of civilization right from the fourth Century B.C. and an international hub of maritime trade. My question to the hon. Minister is: Would the Government explore the mounds of Chandraketugarh also for high resolution satellite imaging along with ground penetrating radar to search the buried sites as has been done in other States.

DR. JITENDRA SINGH: Mr. Chairman, Sir, to search the sites high resolution is being used along with multiple technologies. We are combining space technology with radar and other technology. For example, in the case of mapping different areas including various structures, villages or land zones, broadly speaking, we use technology at three levels. We use space technology, then, at the aerial level we use drones, at the terrestrial level we use radars, which gives much more precise

information and much more accuracy also. That is also the reason that India's space technology and India's technological achievements are now being acknowledged by other countries also. As for the hon. Member's question, we are glad to share the information that we have carried out an extensive exercise called *Swamitva*, on the orders of the Prime Minister, Shri Narendra Modi, to map the Panchayats. We are already through with two lakh inhabited Panchayats of the country. This was also done using the same technology that the hon. Member is hinting at, combined with other related technologies like radar.

SHRI SUKHENDU SEKHAR RAY: Sir, I had specifically asked whether the Government was considering Chandrakhetugarh for exploring.

DR. JITENDRA SINGH: Yes. This is an ongoing process. It has also reduced the human interface which was happening. So, it has also saved time, saved cost and brought more transparency in each of the working departments.

DR. M. THAMBIDURAI: Sir, Tamil Nadu is very proud that the Government of India identified the *Ram setu*. I want to know from the Government, through you, Sir, as to whether the Government will take steps to protect it and establish relationship between Sri Lanka and Tamil Nadu.

DR. JITENDRA SINGH: Sir, the question asked by the hon. Member is very appropriately linked to what Prime Minister Modi ji has, time and again, been reiterating. The Department of Space, which is answering the question today, may have a limited role. But, yes, once the headways are made or some information is gathered, then the Ministry of Tourism and the Archives Department also come in. It is, ultimately, the Government's responsibility to preserve our structures and try to gather much more information and share it with related stakeholders.

MR. CHAIRMAN: Q. No. 175.